DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed July 6, 2010 have been fully considered but they are not fully persuasive.

2. Applicant argues that the prior art does not teach applying the adhesive, then applying the fibers onto areas coated with the adhesive of at least one of the cover sheets. It is admitted that Lefeber et al. do not specifically teach applying adhesive to form a patterned or non-continuous layer.

However, Lefeber et al. states that hybrid laminates can be made by using cover sheets of different material, adhesives, including thermosetting resins, and/or fibers, possibly having different fiber orientations, or by applying more or less layers, to form a wide range of hybrid laminates with different characteristics. In treating the laminate before obtaining the final product, one of ordinary skill in the art would be aware of any processing conditions or application methods would not damage the properties of the laminate materials, to adversely affect the adhesion between layers (column 1, lines 30-35; column 2, lines 51-63). Gregorian et al. teach locally applying adhesive (28), at a desired viscosity, onto predetermined specific areas of a substrate (32) in a pattern, comprising cavities or channels which remain free of adhesive (28) and flock (28), and is also in the form of a discontinuous layer having islands of adhesive (column 2, lines 3-9; column 4, lines 10-22; column 6, lines 6-26; Figure 2). It would have been obvious to use a foamed adhesive as Gregorian et al. taught to allow guidance of liquid and gaseous media within, as well as impart flexibility and breathability within the laminate

before further shaping (Lefeber: column 3, lines 43-52; Gregorian: column 6, lines 15-26).

In response to applicant's argument that Simila is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Simila is solely used to teach applying adhesive by screen printing, as it is a well-known printing method (paragraph 0045).

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 27, 29, 39, 43, 47, 48, 49, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lefeber et al. (US 5,185,198) in view of Gregorian et al. (US 4,035,532)

With respect to claims 27, 29, 39, 47, 48, 49, and 53, Lefeber et al. teach a method for manufacturing a composite layer structure from a first and second cover sheet between which a core sheet is provided which comprises fibers and thermoplastic adhesive, wherein the cover sheets are made of metallic and alloy materials (column 3, lines 10-26), said method comprising the following steps:

- applying fibers and adhesive onto one or both cover sheets whereby locally varying physical properties of the composite layer structure are achieved by locally applying the fibers and adhesive;
- joining the cover sheets together.

Lefeber et al. teach that the adhesive layer can comprise all kinds of layers known in the prior art both thermosetting and thermoplastic resin material which can incorporate all kind of fibers It is also possible to subject the laminate to a post-stressing treatment after which the internal stress distribution is favorable for fatigue and compression (column 6, lines 3-9). By using metal sheets of different alloys and tempers, or different adhesive/fiber layers (fiber type and resin type), or different fiber orientations, or by applying more or less layers, it would have been obvious that a wide range of hybrid laminates with different characteristics could be obtained (column 1, lines 30-35).

However, Lefeber et al. do not specifically teach applying the adhesive, then applying the fibers onto areas coated with the adhesive of at least one of the cover sheets. Gregorian et al. teach locally applying adhesive (28), at a desired viscosity, onto predetermined specific areas of a substrate (32) in a pattern, comprising cavities or channels which remain free of adhesive (28) and flock (28), and is also in the form of a discontinuous layer having islands of adhesive (column 2, lines 3-9; column 4, lines 10-22; column 6, lines 6-26; Figure 2). It would have been obvious to use a foamed adhesive as Gregorian et al. taught to allow guidance of liquid and gaseous media

within, as well as impart flexibility and breathability within the laminate before further shaping (Lefeber: column 3, lines 43-52; Gregorian: column 6, lines 15-26).

With respect to claim 43, Lefeber et al. teach a hardening process for a composite layer structure to comprise several steps, depending on the type of adhesive(s) used (abstract; column 5, line 62 – column 6, line 12).

5. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lefeber et al. in view of Gregorian et al. as applied to claim 27 above, and further in view of Simila.

The teachings of claim 27 are as described.

Although not specifically taught by Lefeber et al. in view of Gregorian et al., it would have been obvious for one having ordinary skill in the art, as Simila teaches, to apply the mixture of fibers and adhesive, such as a thermosetting adhesive, by screen printing, as one of various conventional methods to create an adhesive pattern (paragraphs 0002, 0006, 0045, and 0080).

6. Claims 40 and 52 rejected under 35 U.S.C. 103(a) as being unpatentable over Lefeber et al. in view of Gregorian et al. as applied to claim 27 above, and further in view of Sobolev.

The teachings of claim 27 are as described above.

With respect to claim 40, Sobolev also teaches applying a mixture of metallic and non-metallic fibers, as the selection of appropriate fibers for the desired properties for the laminate and for compatibility with the adhesive being used will be apparent to one skilled in the art (Sobolev: column 11, lines 41-44 and lines 59-62).

With respect to claim 52, Lefeber et al. in view of Gregorian et al. do not teach depositing a mixture of adhesive and fibers by spraying; however, it would have been obvious to one having ordinary skill in the art, as Sobolev teaches a method for producing laminates comprising two metal sheets with fibrous core made of metallic fibers, and before the two sheets are joined together, one cover sheet is applied in certain areas with a mixture of adhesive and fibers by a reciprocating spray nozzle (abstract; column 8, lines 17-36; column 11, lines 38-61; Figures 1A and 1B).

7. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lefeber et al. in view of Gregorian et al., as applied to claim 27 above, and further in view of Kirkpatrick et al. (US 3,706,614)

The teachings of claim 27 are as described above.

Lefeber et al. in view of Gregorian et al. do not teach applying fibers in a positive/negative pattern. However, it would have been obvious to one having ordinary skill in the art to do so, as Kirkpatrick et al. teach creating an electric field, and polarize fibers (50) and fix them into predetermined positions to create patterns (column 8, line 58 – column 9, line 25).

8. Claims 42, 44, 45, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lefeber et al. in view of Gregorian et al. as applied to claim 27 above, and further in view of Coran et al. (US 3,767,505)

The teachings of claim 27 are as described above.

With respect to claims 42, 44 and 45, Lefeber et al. in view of Gregorian et al. do not specifically teach applying fibers to a cover sheet by transfer. However, it would

have been obvious to do so, as Coran et al. teach depositing fibers (33), in a disoriented manner, on a carrier (14) and putting the carrier onto a cover sheet (11) with adhesive, thereby adhering the fibers to the respective cover sheet, and removing the carrier thereafter, since other methods are less likely to provide composites with uniform spacing between fibers in a predetermined pattern (column 1, lines 12-24 and 49-55; Figures 3 and 4b).

With respect to claim 50, Lefeber et al. in view of Gregorian et al. and Coran et al. teach magnetically aligning fibers on a carrier (Coran: column 3, lines 15-34; claim 8; Figure 3).

Allowable Subject Matter

9. Claims 31, 32, 33, 35, 36, 51, and 54-60 are allowed.

With respect to claim 31, the prior art does not teach a method for manufacturing a composite layer structure from cover sheets and a fibrous core sheet are made of steel, aluminum or any other metallic materials, or mixtures comprising these materials, where fibers are fixed onto at least one of the cover sheets by inductive stitch welding.

With respect to claim 33, the prior art does not teach a method for manufacturing a composite layer structure from a first and a second cover sheet between which a core sheet is provided which comprises a composition of fibers and adhesive, wherein the cover sheets and the fibers are made of steel, aluminum or any other metallic materials, or alloys, or ceramics, or any substances or mixtures comprising these materials, said method comprising:

applying a mixture of fibers (9) and adhesive (5) onto at least one of the first and the second cover sheets (1, 2) whereby locally varying physical properties of the composite layer structure are achieved by locally applying the mixture only onto predetermined areas of the cover sheet(s) in the form of a pattern comprising cavities or channels which remain free of the mixture of fibers and adhesive, or in the form of a non-continuous layer comprising islands of the mixture of fibers (9) and adhesive (5), such that inherent stresses due to different thermal expansion coefficients of the cover sheets (1, 2) are at least substantially avoided; and joining the cover sheets (1, 2) together.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SONYA MAZUMDAR whose telephone number is (571)272-6019. The examiner can normally be reached on Monday-Thursday, 9:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Philip Tucker can be reached on (571) 272-1095. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sonya Mazumdar/
Patent Examiner, Art Unit 1791

/Philip C Tucker/

Supervisory Patent Examiner, Art Unit 1791